Practitioner's Docket No. U013420-7

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PATENT TRADEMARK OFFICE

CHAPTER II

TRANSMITTAL LETTER TO THE UNITED STATES ELECTED OFFICE (EO/US)

(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

PCT/GB99/03580	29 OCTOBER 1999	30 OCTOBER 1998
INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED

FOODSTUFF COMPOSITIONS
TITLE OF INVENTION

MOHAMED BAKRI **ASSOUMANI**
APPLICANT(S)

Box PCT
Assistant Commissioner for Patents
Washington D.C. 20231
ATTENTION: EO/US

NOTE: The completion of those filing requirements that can be made at a time later than 30 months from the priority date results from the Commissioner exercising his judgment under the authority granted under 35 USC 371(d). The filing receipt will show the actual date of receipt of the last item completing the entry into the national phase. See 37 C.F.R. §1.491 which states: "An international application enters the national state when the applicant has filed the documents and fees required by 35 USC 371(c) within the periods set forth in § 1.494 and § 1.495."

CERTIFICATION UNDER 37 C.F.R. 1.10*
*(Express Mail label number is **mandatory**.)*
(Express Mail certification is optional.)

I hereby certify that this correspondence and the documents referred to as attached therein are being deposited with the United States Postal Service on this date April 30, 2001, in an envelope as "Express Mail Post Office to Addressee," Mailing Label Number EL728212622US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

GERALDINE MARTI
(type or print name of person mailing paper)
Geraldine Marti
Signature of person mailing paper

WARNING: *Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.*

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b).*
*"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

WARNING: *Where the items are those which can be submitted to complete the entry of the international application into the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. §1.10 must be used (since international application papers are not covered by an ordinary certificate of mailing - See 37 C.F.R. §1.8.*

NOTE: *Documents and fees must be clearly identified as a submission to enter the national state under 35 USC 371 otherwise the submission will be considered as being made under 35 USC 111. 37 C.F.R. § 1.494(f).*

1. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. 371:

   a. [X] This express request to immediately begin national examination procedures (35 U.S.C. 371(f)).

   b. [X] The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

2.Fees

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
[ ]*	TOTAL CLAIMS	9 - 20 =		x $ 18.00 =	$
	INDEPENDENT CLAIMS	2 - 3 =		x $ 80.00 =	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable) + $270.00				
BASIC FEE**	[ ] U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO: [ ] and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(2) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 CFR 1.492(a)(4)) ..... $100.00 [ ] and the above requirements are not met (37 CFR 1.492(a)(1)) ..... $690.00 [X] U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: [ ] has been paid (37 CFR 1.492(a)(2)) ..... $710.00 [ ] has not been paid (37 CFR 1.492(a)(3)) ..... $1,000.00 [X] where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 CFR 1.492(a)(5)) $860.00				
				Total of above Calculations	860.00
SMALL ENTITY	Reduction by ½ for filing by small entity, if applicable. Affidavit must be filed. (note 37 CFR 1.9, 1.27, 1.28)				- 430
				Subtotal	
				Total National Fee	~~$860.00~~ 430
	Fee for recording the enclosed assignment document $40.00 (37 CFR 1.21(h)). (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				
TOTAL				Total Fees enclosed	~~$860.00~~ 430

*See attached Preliminary Amendment Reducing the Number of Claims.

i. [X] A check in the amount of $860.00 to cover the above fees is enclosed.
ii. [ ] Please charge Account No. _____ in the amount of $ _____.
A duplicate copy of this sheet is enclosed.

**WARNING: *"To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date: * * * (2) the basic national fee (see § 1.492(a)). The 30-month time limit may not be extended." 37 C.F.R. § 1.495(b).*

WARNING: *If the translation of the international application and/or the oath or declaration have not been submitted by the applicant within thirty (30) months from the priority date, such requirements may be met within a time period set by the Office. 37 C.F.R. § 1.495(b)(2). The payment of the surcharge set forth in § 1.492(e) is required as a condition for accepting the oath or declaration later than thirty (30) months after the priority date. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than thirty (30) months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of § 1.136 apply to the period which is set. Notice of Jan. 3, 1993, 1147 O.G. 29 to 40.*

3. [X] A copy of the International application as filed (35 U.S.C. 371(c)(2)):

NOTE: *Section 1.495 (b) was amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment "The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date." Notice of Jan. 7, 1993, 1147 O.G. 29 to 40, at 35-36. See item 14c below.*

a. [ ] is transmitted herewith.
b. [ ] is not required, as the application was filed with the United States Receiving Office.
c. [X] has been transmitted
i. [X] by the International Bureau.
Date of mailing of the application (from form PCT/IB/308): _____.
ii. [ ] by applicant on _____.
Date

4. [X] A translation of the International application into the English language (35 U.S.C. 371(c)(2)):
a. [ ] is transmitted herewith.
b. [X] is not required as the application was filed in English.
c. [ ] was previously transmitted by applicant on _____.
Date
d. [ ] will follow.

09/830763

JC18 Rec'd PCT/PTO 30 APR 2001

5. [X] Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. 371(c)(3)):

NOTE: The Notice of January 7, 1993 points out that 37 C.F.R. § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.

a. [ ] are transmitted herewith.
b. [ ] have been transmitted
  i. [ ] by the International Bureau.
  Date of mailing of the amendment (from form PCT/IB/308): __________.
  ii. [ ] by applicant on ____________.
  Date
c. [X] have not been transmitted as
  i. [X] applicant chose not to make amendments under PCT Article 19.
  Date of mailing of Search Report (from form PCT/ISA/210):
  ii. [ ] the time limit for the submission of amendments has not yet expired. The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.

6. [X] A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. 371(c)(3)):
a. [ ] is transmitted herewith.
b. [ ] is not required as the amendments were made in the English language.
c. [X] has not been transmitted for reasons indicated at point 5(c) above.

7. [x] A copy of the international examination report (PCT/IPEA/409)
  [x] is transmitted herewith.
  [ ] is not required as the application was filed with the United States Receiving Office.

8. [ ] Annex(es) to the international preliminary examination report
a. [ ] is/are transmitted herewith.
b. [ ] is/are not required as the application was filed with the United States Receiving Office.

9. [ ] A translation of the annexes to the international preliminary examination report
a. [ ] is transmitted herewith.
b. [ ] is not required as the annexes are in the English language.

10. [x] An oath or declaration of the inventor (35 U.S.C. 371(c)(4)) complying with 35 U.S.C. 115
    a. [ ] was previously submitted by applicant on _____. Date
    b. [ ] is submitted herewith, and such oath or declaration
       i. [ ] is attached to the application.
       ii. [ ] identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. 1.70.
    c. [x] will follow.

Other document(s) or information included:

11. [x] An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):
    a. [ ] is transmitted herewith.
    b. [ ] has been transmitted by the International Bureau.
       Date of mailing (from form PCT/IB/308): _____.
    c. [ ] is not required, as the application was searched by the United States International Searching Authority.
    d. [X] will be transmitted promptly upon request.
    e. [ ] has been submitted by applicant on _____. Date

12. [ ] An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98:
    a. [ ] is transmitted herewith.
       Also transmitted herewith is/are:
       [ ] Form PTO-1449 (PTO/SB/08A and 08B).
       [ ] Copies of citations listed.
    b. [ ] will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. 371(c).
    c. [ ] was previously submitted by applicant on _____. Date

13. [ ] An assignment document is transmitted herewith for recording.

A separate [ ] "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or [ ] FORM PTO 1595 is also attached.

_____
_____
_____

14. [x] Additional documents:
    a. [ ] Copy of request (PCT/RO/101)
    b. [x] International Publication No. WO 00/25602
        i. [x] Specification, claims and drawing
        ii. [ ] Front page only
    c. [ ] Preliminary amendment (37 C.F.R. § 1.121)
    d. [x] Other

FORM PCT/ISA/206; FORM PCT/IPEA/408 FORM PCT/IPEA/409;

15. [X] The above checked items are being transmitted
    a. [X] before 30 months from any claimed priority date.
    b. [ ] after 30 months.

16. [ ] Certain requirements under 35 U.S.C. 371 were previously submitted by the applicant on _____, namely:

AUTHORIZATION TO CHARGE ADDITIONAL FEES

WARNING: *Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges if extra claims are authorized.*

NOTE: "A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

NOTE: "Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

[X] The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to Account No. 12-0425.

[X] 37 C.F.R. 1.492(a)(1), (2), (3), and (4) (filing fees)

WARNING: *Because failure to pay the national fee within 30 months without extension (37 C.F.R. § 1.495(b)(2)) results in abandonment of the application, it would be best to always check the above box.*

[ ] 37 C.F.R. 1.492(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by

the PTO in any notice of fee deficiency (37 C.F.R. § 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possible when dealing with amendments after final action.

[X] 37 C.F.R. 1.17 (application processing fees)
[X] 37 C.F.R. 1.17(a)(1)-(5)(extension fees pursuant to § 1.136(a).
[X] 37 C.F.R. 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

[ ] 37 C.F.R. § 1.492(e) and (f) (surcharge fees for filing the declaration and/or filing an English translation of an International Application later than 30 months after the priority date).

SIGNATURE OF PRACTITIONER

Reg. No.: 25, 858

WILLIAM R. EVANS
(type or print name of practitioner)

Tel. No.: (212) 708-1930

P.O. Address

Customer No.:

c/o Ladas & Parry
26 West 61st Street
New York, N.Y. 10023

Practitioner's Docket No. U 013420-7 *PATENT*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

[X] In re application of: Mohamed Bakri ASSOUMANI
Application No.: Group No.:
Filed: Examiner:
For: FOODSTUFF COMPOSITIONS

[ ] *Patent No.: Issue Date:

**NOTE: Insert name(s) of inventor(s) and title also for patent Where statement is with respect to a maintenance fee payment, also insert application number and filing date, and add Box M. Fee to address.*

STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(c-f) and 1.27(b-d))

With respect to the invention described in
[ ] the specification filed herewith.
[X] PCT application no. PCT/GB99/03580, filed October 29, 1999.
[ ] patent no. _____ issued _____.

I. IDENTIFICATION AND RIGHTS AS A SMALL ENTITY

I hereby state that I am

(complete either (a), (b), (c) or (d) below)

(a) Independent Inventor

[ ] a below named independent inventor, and that I qualify as an independent inventor, as defined in 37 CFR 1.9(c), for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office.

(b) Noninventor Supporting a Claim by Another

[ ] making this statement to support a claim by

---

for a small entity status for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code. I hereby state that I would qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, if I had made the above identified invention.

(c) Small Business Concern

[ ] the owner of the small business concern identified below:

check one → [X] an official of the small business concern empowered to act on behalf of the concern identified below:

Name of Concern AQUACAL LIMITED
Address of Concern STRAND FARM, CURRABINNY, CARRIGALINE, CO. CORK, IRELAND
and

that the above identified small business concern qualifies as a small business concern, as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

(d) Non-Profit Organization

[ ] an official empowered to act on behalf of the nonprofit organization identified below:

Name of Organization _____
Address of Organization _____
_____

TYPE OF ORGANIZATION

[ ] University or Other Institution of Higher Education
[ ] Tax Exempt Under Internal Revenue Service Code (26 USC 501(a) and 501(c) (3))

[ ] Nonprofit Scientific or Educational Under Statute of State of the United States of America
(Name of State _____)
(Citation of Statute _____)

[ ] Would Qualify as Tax Exempt Under Internal Revenue Service Code (26 USC 501(a) and 501(c) (3)), if Located in the United States of America

[ ] Would Qualify as Nonprofit Scientific or Educational Under Statute of State of the United States of America, if Located in the United States of America
(Name of State _____)
(Citation of Statute _____)

and that the nonprofit organization identified above qualifies as a nonprofit organization, as defined in 37 CFR 1.9(e), for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code.

II. OWNERSHIP OF INVENTION BY DECLARANT

I hereby state that rights under contract or law remain with and/or have been conveyed to the above identified

[ ] person	[X] concern	[ ] organization
(item (a) or (b) above)	(item (c) above)	(item (d) above)

EXCEPT, that if the rights held are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held (1) by any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, (2) any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or (3) a nonprofit organization under 37 CFR 1.9(e).

[X] no such person, concern, or organization
[ ] person, concerns or organizations listed below*

**NOTE:* *Separate statements are required from each named person, concern or organization having rights to the invention as to their status as small entities. (37 CFR 1.27)*

Full Name _____
Address _____
[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

Full Name _____
Address _____
[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NONPROFIT ORGANIZATION

III. ACKNOWLEDGEMENT OF DUTY TO NOTIFY PTO OF STATUS CHANGE

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

IV. DECLARATION

(check the following item, if desired)

NOTE: The following verification statement need not be made in accordance with the rules published on October 10, 1997, 62 Fed. Reg. 52131, effective December 1, 1997.

NOTE: "The presentation to the Office (whether by signing, filing, submitting, or later advocating) of any paper by a party, whether a practitioner or non-practitioner, constitutes a certification under § 10.18(b) of this chapter. Violations of § 10.18(b)(2) of this chapter by a party, whether a practitioner or non-practitioner, may result in the imposition of sanctions under § 10.18(c) of this chapter. Any practitioner violating § 10.18(b) may also be subject to disciplinary action. See §§ 10.18(d) and 10.23(c)(15)." 37 CFR 1.4(d)(2).

[ ] I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

V. SIGNATURES

(complete only (e) or (f) below)

(e)
NOTE: All inventors must sign the statement.

_____ Date:_____
Name of Inventor

_____
Signature of Inventor

_____ Date:_____
Name of Inventor

_____
Signature of Inventor

_____ Date:_____
Name of Inventor

_____
Signature of Inventor

(add lines for any additional inventors who must sign)

or

(f)
NOTE: The title of the person signing on behalf of a concern or nonprofit organization should be specified.

Name of Person Signing LESLIE MUCHINCLOSS

Title of Person CHAIRMAN
(if signing on behalf of a concern or non-profit organization)

Address of Person Signing AQUACAL LIMITED, STRAND FARM, CURRABINNY,
CARRIGALINE, CO. CORK, IRELAND

SIGNATURE L Muchincloss DATE March 21 2001

FOODSTUFF COMPOSITIONS

This invention relates to solid and semi-solid foodstuff compositions particularly foodstuff compositions containing calcium materials.

The fortification of foodstuffs with calcium compounds is well recognised as a means of supplementing calcium in the diet. However, the addition of presently available sources of calcium has been found to result in deterioration in the physical properties of the product to which calcium is added when added in the amounts sufficient to give the desired available calcium so as to ensure an adequate intake of calcium in the diet.

In International Patent Application no. PCT/GB98/00142 published as WO/98/33508 there is disclosed the use of a very pure form of corallinaceae for treatment of conditions created by failure of immuno regulation in the body. This has included the use of corallinaceae for the manufacture of a medicament for the treatment of reduced calcium levels and use in manufacturing medicament for raising pH levels in the colon. This application discloses forming emulsions in the manufacture of foods wherein an emulsifier is combined with a residue of a very pure form of corallinaceae (Maërl) and then with an oil phase of a foodstuff which is formed into an emulsion with an aqueous phase. There is reference to the use of these oil products in bakery products. However, this specification relates primarily to inclusion of the residues for nutritive purposes and does not indicate generally the value of this particular material in relation to starch products particularly farinaceous products nor does it discuss improvements in physical, including organoleptic, properties.

Studies of the addition of corallinaceae by-products and residues to foodstuffs have been in relation to nutritive properties (Agro-food-Industry Hi-Tech; September/October, 1997 and see a subsequent article in the September-October 1998 issue). These articles have discussed the properties of calcareous materials in terms of bioavailability of calcium. The high surface area of corallinaceae products appeared to correlate with solubility at various pH's which correlated with calcium absorption and with physiological and biochemical properties arising from such bioavailability. Similarly the later article refers to buffering and similar properties and discusses anti-acid properties, mentions acid uptake in the context of organic juice and particularly structure, texture and mouthfeel in that connection, ie. of beverage.

It has now been found that if a form of corallinaceae is employed in the manufacture of solid and semi-solid foodstuffs much superior results are obtained in the texture of the resulting product. In particular it is possible to add higher amounts of calcium than is possible with other sources of calcium.

Without limitation on the invention, it is believed that the advantages of the invention, at least partially, arise from the unusual structure of the calcareous material employed. It is believed that the calcareous material has a porous structure which on hydration or oil absorption collapses to give a very smooth structure. This is analogous to a hydrocolloid or edible gel which holds the fluid phase in extremely small pores. Structure collapse can be achieved with an amount of moisture of 2% by weight.

Other properties of the calcareous material are

film forming properties, adhesiveness and binding properties and non-abrasiveness. These properties are not found in known food grade calcium carbonate materials. These properties were not appreciated from the previous work on the calcareous material based on the invention which was primarily directed to the nutritive and pharmacological properties.

The absorption capacity and binding properties can be of particular advantage in cereal products and may explain the positive effects on stickiness and strength. These effects also assist in applications of carbohydrates (sugars) for example sugar (eg. sucrose or fructose), syrups and honey. There is reduction of water activity and extension of shelf life and improvement of flavour formation by non-enzymatic browning.

The calcareous material does not require prior solubilisation for use in semi-moist or dry products. At about pH 6.5, approximately 19% by weight of the calcium content will ionise and the carbonate portion will slightly increase pH and buffer the system. It is believed this will contribute to homogenous browning (Maillard reactions (with possible Strecker degradations)) during a cooking stage and better flavour formation. These give rise to unexpected advantages in texture, colour, flavour and shelf-life.

The invention therefore has two aspects. The first is the improvement in fatty products where the calcareous material is in the fatty phase and enhances emulsion stability, controls fat crystallisation and enhances organoleptic properties. Incidentally this permits inclusion of sufficient calcareous material to allow incorporation of calcareous material to give in excess of 25% of ERDA requirements.

The second is the improvement as discussed subsequently on non-fatty products of physical and organoleptic properties.

This has been found to be of particular application to solid or semi-solid products as distinct from beverages. By a solid or semi-solid product is meant one having significant shape-retaining properties as distinct from flowable liquid compositions which have low or non-existent shape retaining properties so that they would normally be classified as beverages.

While the improvements of the invention can be obtained in high fat compositions, for example emulsified fat products in which the calcareous material is incorporated in an oil phase, improvements are achieved in non-emulsified compositions, for example cheese spreads and yoghurt-type products. Improvement is also found in fatty and non-fatty products of the ice-cream type, ie. intended for consumption while still frozen.

As will be described in detail, a significant improvement is found in farinaceous products when the calcareous materials of the invention are added.

Products of the invention also include confectionery particularly carbohydrate products, ie. products consisting to a significant extent of sugars such as sucrose. These can include candy products, gelatinous products and particularly chocolate based products including cocoa fat products and other fat products and chocolate products such as cocoa. Candy products can be boiled sugar products and other confectionery products. Confectionery products include dessert products including pudding mixes and gelatinous

products. The invention also applies to meat derived products.

A modification of the invention is the use in cosmetic products of the calcareous materials. Such cosmetic products include face masks, scrubs, body wraps and scrubs, ie. those products applied for advantageous effects on the skin as distinct from mere embellishment.

The calcareous material used in the invention provides calcium in carbonate form. It contains 34 by weight calcium as compared to 40 by weight for conventional commercial calcium carbonate.

By adding the calcareous material according to the invention it is possible to achieve a known RDI (Recommended Dietary Intake) for a specified weight or volume of foodstuff and also, generally, improve the qualities of the product, for example texture, mouth-feel, strength and cooking properties.

A calcareous material useable in the invention is more fully described in the above international patent application. The calcareous material is obtained from corallinaceae.

Corallinaceae, for example Lithothamnium corallioides (Lithothamnium calcareum sometimes known as phymatolithon calcareum), are known seaweeds which are very abundant in certain cold and temperate seas. Once harvested the crude residual product consists primarily of mineral substances, particularly calcium carbonate and magnesium carbonate. The largest component is calcium carbonate, often about 34 by weight. This product is sometimes identified as Maerl though the term Maërl encompasses residues of coralline algae of various members of the order corallinales (Class Rhodophyceae)

including members of corallinaceae for example members of the species Lithothamnium corallioides, Phymatolithon calcareum and Lithothamnium glaciale.

Crude corallinaceae (Lithothamnium corallioides) residues have been commercially available for use in the prevention of acidosis in intensively fed cows. In French patent FP2 201 040 there is disclosed the use of Maërl which appears to be in the crude form for animal feeds. Such products as have been available until the present time have tended to be relatively impure products frequently from contaminated sources. Usually they contain significant amounts of siliceous materials derived from the original product as dredged and other non-corallinaceae residues for example ground shells of sea-creatures.

The Institute of Oceanography in Paris produced a report on corallinaceae particularly Lithothamnium in 1989 describing the residual crude product (Maerl) and describing its use in treatment of soil and for animal feed as a dietary supplement and for treatment of water.

Corallinaceae particularly Lithothamnium corallioides are coralline algae. There are a number of sub-species of corallinaceae particularly Lithothamnium differentiated by morphological data but these data can vary depending on local sea bed and weather conditions. Other known "relatives" include Phymatolithon calcareum and in more northerly regions Lithothamnium glaciale. These plants lay down calcium carbonate in their cell walls which gives them a hard stony texture. The living corallinaceae for example Lithothamnium corallioides generally show a red colour due to the presence of a pigment phycoerythrin in their structure. When dead the colour is white or yellowish. Corallinaceae for example Lithothamnium corallioides occurs naturally in cold and

temperate seas and has been reported in Norway, Canada, Scotland, Ireland and France.

Since compositions of the subject invention are to be used in foodstuffs it is of course important that the corallinaceae which is to be exploited in the invention is derived from a part of the world which does not suffer from heavy pollution. For this purpose corallinaceae particularly Lithothamnium corallioides harvested from stocks north of Lonehort Point, Castletownbere, County Cork in the Republic of Ireland have proved very satisfactory but there are also deposits off the West Coast of Galway.

Naturally occurring residues of Lithothamnium corallioides were harvested at the above site at Lonehort Point, purified and concentrated.

The raw material can be purified by initial extensive washing with sea and fresh water together with removal of extraneous sand, shells, and other debris particularly siliceous debris such as stones. This step usually reduces the material obtained by dredging from the sea bed to about 20% by weight.

The cleaned and separated product is then subjected to intensive cleaning by for example, bleaching and sterilising in hydrogen peroxide for from 8 to 24 hours, further washing in water, drying in a sterile fluid bed and final milling under bacterial controlled conditions.

For the purpose of this invention it is important for compositions intended for consumption (edible products) that they comply with Food Regulations, for example in relation to the upper limits for contents of heavy metals. This may result inherently from natural source or from the technique of purification.

The stringent washing conditions can reduce sodium content of the raw product from amounts in the order of well in excess of 1,000 ppm for example amounts up to 5,200 ppm to sodium contents in the low hundreds, for example 300 ppm. Thus there can be a reduction of about 10 fold in the sodium content as compared to raw material.

The silica content of this final material is normally not more than 0.5 by weight as compared to a silica content in previously available Maerl from a commercial source, of about 3 by weight.

A representative sample of this purified, concentrate contained the following elements in the following amounts (by weight):

Calcium	34 %
Magnesium	2.4 %
Phosphorous	0.08 %
Potassium	0.10 %
Sulphur	0.45 %
Iron	25 ppm
Boron	16.5 ppm
Fluorine	200 ppm
Sodium	310 ppm
Manganese	125 ppm
Nickel	30 ppm
Cobalt	6 ppm
Copper	10 ppm
Lead	460 ppb
Zinc	37 ppm
Selenium	1 ppm
Molybdenum	39 ppm
Iodine	160 ppm
Arsenic	<1 ppm
Chromium	13 ppm
Cadmium	0.2 ppm
Mercury	<50 ppb
Aluminium	<5 ppm

According to the present invention there is provided use in a solid or semi-solid foodstuff of a

material to improve organoleptic and physical properties and calcium content characterised in that the material is a calcareous residue of corallinaceae with a content of heavy metals below the upper limits acceptable for edible products.

The calcareous residue can be incorporated in a foodstuff having an emulsified oil or fat phase into which is incorporated the corallinaceae residue and which has improved organoleptic properties as compared to the same product free of said residue but advantages also exist for a foodstuff containing fat material in which the corallinaceae residue is distributed generally in the foodstuff.

Particularly valuable foodstuffs in which the invention has advantage is ones to be consumed in frozen form. The invention is also applicable to yoghurt products.

The invention is also particularly applicable to carbohydrate products including desserts, confectionery and similar products or chocolate products.

In non-fat products the calcareous material is preferably added by a carbohydrate (sugar) water phase.

A modification of the invention is use of the calcareous material in cosmetic products, which products have advantages on the skin as distinct from mere decorative effects.

The foodstuff can contain a sufficient proportion of the calcareous material as defined above derived from corallinaceae to provide a substantial proportion of the Recommended Dietary Intake of calcium in the daily diet. The foodstuff in question is primarily intended for

human beings although the invention could be applied to foodstuffs for animals.

Particular foodstuffs are starch based foodstuffs, especially those derived from farinaceous materials i.e. those based primarily on wheat or similar farinaceous grains. Particular products in which the calcareous material can be employed include bread, so-called biscuits or wafers, the various forms of pasta including noodles, breakfast cereals and extruded farinaceous products and so-called snack foods.

Particularly in relation to pasta and as discussed in an article by J Smewing on the Texture of Pasta in Cereal Foods World January 1997 volume 42 no. 1 pages 8 through 12 microstructure changes profoundly affect the properties of the resulting pasta and changes in the components can radically change the hydration characteristics. In that article there are described assessment of various product characteristics both cooked and uncooked pasta products.

The proportion of calcareous product added can depend on the final desired calcium Recommended Dietary Intake or the improvement in physical (eg) organoleptic properties but for example can range up to 4 or 5% by weight of the basic raw materials in forming the final food product. The preferred range is 0.5 to 3% by weight most preferably 1 to 2 by weight more particularly it is up to about 1.6 by weight of the product. For example in biscuits intended to supplement a diet with calcium one can employ approximately 20 grams per so-called biscuit representing about 2% of the final product.

The addition of the calcareous product used in the invention as compared to the results when other sources

of calcium are used not only improved the properties of baked products but, in some instances, has also been found to provide a buffering effect in the stomach and also appears to provide anticariogenic effects. It is believed that this may partly arise from protection against acid in the mouth.

The invention will now be illustrated by the following examples which are not however intended to limit the scope of the invention. The Calcium Product (calcareous product derived from corallinaceae) employed is a commercial product prepared from Lithothamnium coralliodes residues as described above and having the analysis set out above and identified commercially as AquaMin. The coated Calcium Product is the calcareous product coated with a mono-diglyceride.

Example 1

Fortification of pasta with calcium.

A conventional pasta product of the spaghetti nature manufactured from durum or other hard wheat flour was employed.

Manufacture of Pasta:

A basic recipe for pasta was used.

Durham Wheat Semolina (766g) + Tap Water (234g) → 1Kg of Pasta.

Mix for 10 min in mixing chamber of the pasta press

↓

Rest for 5 min

↓

Warm up die : Extrude

↓

Cook for four min

↓

Cool for 30-60 sec under running tap water

↓

Analyse

The following batches of conventional pasta were made and analysed.

1. Control (no added Calcium).
2. Pasta - 0.73 Calcareous Product (40 R.D.I./150g serving).
3. Pasta - 1.26 Calcareous Product (70 R.D.I./150g serving).
4. Pasta - 1.4 Coated Calcareous Product (70 R.D.I./150g serving).
5. Pasta + 1.07% Calcium Carbonate control (70 R.D.I./150g serving).

[R.D.I. - Recomended Dietary Intake]

100g of pasta was then cooked in 500ml of water for four minutes, the pasta was then analysed for firmness and stickiness using a texture analyser (AACC 16-50 standard method).

Results:

Sample	Firmness (Force g)	Stickiness (Force g)
Batch one	333.022	-1019.63
Batch two	377.902	-1019.927

Batch three	300.144	-1018.654
Batch four	310.046	-1018.367
Batch five	291.144	-1017.703

The control batch and batch two (40% R.D.I.) were made and analysed on the same day. The test results showed that addition of Calcareous Product increased the firmness of the pasta and reduced the stickiness when compared to the control.

At a higher level of Calcareous Product addition, additional water was added (5ml/1 Kg pasta) to prevent the pasta becoming too firm. Therefore a direct comparison cannot be made between batches 1,2 and 3,4,5.

Batch five was significantly stickier than any of the other batches of pasta. This was evident in handling the pasta as strands tended to stick together. This did not happen to the other batches.

The organoleptic qualities - colour, volume, speckledness, glossiness and bulkiness - of each batch of pasta were similar and it was impossible to detect any differences in taste between the batches.

The fortification of fresh pasta with a Calcareous Product as employed in this invention was very successful, increasing the strength of the pasta and reducing the stickiness.

Example 2

Fortification of biscuits with Calcium

Four batches of biscuits were made using the

following recipe:

400g	Confectionery Flour
166.8g	Fat
140g	Sugar
20g	Syrup
2.8g	Salt
2.0g	Ammonium Bicarbonate
2.0g	SSL (Sodium Stearoyl Lactylate)
73g	Water

1. Batch one: Control - no added Calcium.
2. 1.8% Calcareous Product.
3. 2.0% Coated Calcareous Product } 40 Calcium R.D.I. per serving*
4. Calcium Carbonate Control.

* one serving of biscuits is three biscuits (20g in weight each).

The biscuits were cooked for exactly eleven minutes and then analysed.

The following parameters were examined: friability, water activity (Aw) and colour.

Sample	Friability	Aw
Batch one	3483.41	0.306
Batch two	4275.13	0.353
Batch three	3406.77	0.335
Batch four	1333.66	0.520

Colour was measured using LAB values.

L. Brightness
A. Red
B. Yellow

Sample	L value	A value	B value
Batch one	60.64	10.52	33.78
Batch two	63.66	9.42	31.77
Batch three	63.63	9.60	31.83
Batch four	72.87	3.33	33.18

Friability

The results showed that addition of Calcareous Product increased the friability of the biscuit when compared with the control (3483.4-4275.1) and addition of coated Calcareous Product decreased the friability of the biscuit. However these differences could not be detected by a taste panel. The friability of the biscuits fortified with Calcium Carbonate were significantly reduced and this was very obvious to the taste panel who felt the biscuits tasted soft/gone off.

Water Activity

The water activity of the biscuits fortified with Calcium Carbonate was significantly increased when compared with the control. Addition of either Calcareous Product or coated Calcareous Product did not have a significant effect on the water activity of the biscuits.

Colour

The LAB values of the biscuits were measured using a Minolta colour meter.

The lightness of the biscuits fortified with Calcareous Product and coated Calcareous Product were marginally increased, whereas the biscuits fortified with Calcium carbonate increased from 60.64-72.87.

The red colour of the biscuits fortified with Calcium Carbonate was significantly reduced when compared with the control, Calcareous Product and coated Calcareous Product had little effect on this parameter.

The yellow colour of the biscuits was marginally reduced in both the biscuits with additional Calcareous Product, Calcium carbonate did not effect this value.

The taste panel were in agreement that there was very little difference in the appearance and taste of the biscuits fortified with Calcareous Product and coated Calcareous Product when compared with the control. Most people were unable to identify which biscuits had the additional Calcium. However the biscuits fortified with Calcium Carbonate were pale in colour, soft and unpalatable to taste (loss of sweet flavour).

EXAMPLE 3

CALCIUM FORTIFICATION OF SPREADS

Margarine	Vegetable Oil Spread
Fat Content	
80% minimum	70-20%
Nature of Fats	
Saturated	Unsaturated
↓	↓
High Melting Point	Low Melting Point

Emulsion

There are two phases :

Water Phase	Oil Phase

The two phases are mixed to build the emulsion. Emulsion building requires energy input in the form of mechanical agitation, ultrasonic vibration or heat.

1. Emulsion Building (3 to 5 minutes)
   ↓
2. Quick Chilling To 15°C
   ↓
3. Fat Crystallisation

Method

AquaMin must be added to the oil phase : the oil will go inside the pores. This will help stabilise the emulsion.

The order of mixing is critical for the addition of AquaMin to this type of emulsion structure spread.

If AquaMin is added to the water phase first, then the water enters the porous structure and these pores become polar. The outside surface of AquaMin is also polar, so that when this is now mixed with the oil, which is hydrophobic, this will destabilise the emulsion.

If however, AquaMin is added to the oil phase first, then the oil enters the pores and due to the oil viscosity it is retained inside. The oil, being hydrophobic, now makes the internal pores hydrophobic. The outside AquaMin surface area is still polar, so now when added to the water phase, which is also polar, a stable emulsion will result.

After the emulsion building stage, chilling and fat crystallisation follow and during the crystallisation stage, AquaMin promotes the formation of the β' crystal form. This crystal structure is most desirable, as it requires less energy to melt than the larger β form and is more stable than the smaller lower energy α form and consequently, the β' crystals give the spread a better mouth feel. As a result of this, in the spread AquaMin has excellent uniform calcium distribution, with no detection of the presence of particles in the mouth.

The only technical issues to be aware of in terms of the impact on the quality of the finished spread are:

- AquaMin's high buffering capacity may affect the titratable acidity of the spread, so in this case it will be necessary to monitor the titratable acidity during the process and compensate through the addition of lactic acid.
- At addition rates above 2%, the off-white colour of AquaMin may affect the colour of the spread, so here it will be necessary to add beta-carotene to the formulation to counter this.

Both issues are dependent on the level of AquaMin addition and will vary on the composition of the spread in terms of fat content, but are easily overcome using ingredients that are universally used during the production process.

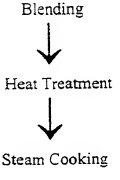
EXAMPLE 4

CALCIUM FORTIFICATION OF CHEESE SPREADS

A cheese spread was made using a standard recipe of:

Young, Medium-Ripe and Over-Ripe Cheddar Cheese
Water
Butter
Whey Powder
Emulsifier
Salt
Preservatives

Method

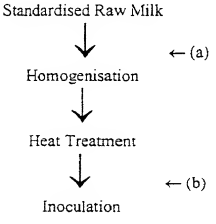


AquaMin is added during the cooking stage and disperses homogeneously throughout the spread. AquaMin can be easily incorporated at levels of 1-2% without any adverse effects. At 2% AquaMin addition in a 200g tub, a 15g serving will provide 12.75% of the RDI for Calcium (the European Union RDI for Calcium is 800mg/day).

EXAMPLE 5

CALCIUM FORTIFICATION OF YOGHURT

In the case of yoghurt production, industrial production typically follows the following process :



Method

AquaMin can be added either (a) before homogenisation or (b) after heat treatment. (a) is preferred as calcium ionisation will be improved and will promote the Ca^{++} interaction with denatured αs-casein. This can result in a slight increase in viscosity.

In the case of stirred yoghurt with fruit, AquaMin can be added to the fruit purees before heat treatment. Ca^{++} will help stabilise fruit puree through the formation of calcium pectate.

This aspect of the invention relates to solid or semi-solid yoghurt compositions as distinct from beverages based on yoghurt.

EXAMPLE 6

CALCIUM FORTIFICATION OF ICE-CREAM

Ice-cream was made using a standard recipe as follows :

Fat	17%
MSNF	11%
Sugar	14%
Emulsifier	0.5%
Water	57%

Two batches of ice-cream were made :

1. Control
2. + 0.79% AquaMin
(Addition of AquaMin provides 100% Calcium fortification in a 200g serving)

Method

Water is heated to 40°C

↓

MSNF Addition

↓

Blend of Sugar, Emulsifier

↓

Addition of Cream ± AquaMin addition

/.....

The ice-cream solution is mixed continuously using a Silverson mixer. The solution is then :

Pasteurised at 72°C for 15 Secs

↓

Twice Homogenised, 150 bar, 50bar

↓

Cool and Age Overnight at 4°C

↓

Frozen at -20°C- Ice-Cream Temp. 5°C

During freezing samples of ice-cream were taken from the different batches at different times to ensure homogenous dispersion.

The following parameters of the ice-cream were examined
1. Calcium Analysis
2. Sensory Analysis
3. Colour
4. Over-Run

1. Calcium analysis confirmed that the calcium was homogeneously dispersed throughout the ice-cream.

Sample	Observed (PPM)
Control	1670
AquaMin	4070
Calcium Carbonate	3950

Samples of ice-cream taken at different stages during the production had similar calcium levels

2. A sensory analysis of the ice-cream was carried out in a local university under controlled conditions in their sensory analysis unit (report available upon request). Panellists were asked to assess ice-cream using the following parameters :

Sample :
Taste (1 = very poor, 5 = very good)
Grittiness (1 = very gritty, 5 = not gritty)
Overall acceptability (1 = worst, 5 = best) /.....

19 panellists took part in this analysis and the results were as follows

Sample	Taste	Grittiness	Acceptability	Preference
A, AquaMin	3.2	4.6	3.6	15
B, Calcium Carbonate	2.8	4.3	2.9	1
C, Control	2.7	2.9	2.3	3

From the results it is clear that AquaMin fortified ice-cream is predominant - 79% of panellists preferred the ice-cream fortified with AquaMin. The control and the ice-cream fortified with calcium carbonate lagged behind, with only 16% and 5% of preferences respectively. The ice-cream fortified with AquaMin scored highest on all parameters of taste, grittiness and acceptability.

3. Colour was measured using a Minolta colour meter and the results were expressed using LAB values :

L = Lightness
A = Red Colour
B = Yellow Colour

Sample	L value	A value	B value
Control	94.03	-3.21	11.82
AquaMin fortified ice-cream	94.39	-2.87	11.37
Calcium carbonate fortified ice-cream	95.61	-2.84	10.83

A statistical Student's t- Test was carried out on these values (9 values for each sample) and the results of the test showed that there was a significant difference between the control and the ice-cream fortified with calcium carbonate for each of the three parameters . AquaMin only had a significant effect on the A value of the ice-cream , it did not effect the L or B values.

4. A further batch of ice-cream was made to assess if calcium addition effected the over-run properties of the ice-cream. Production conditions were kept constant and it appears that addition of calcium did not have a significant effect on the over-run properties.. The control, AquaMin fortified ice-cream and the calcium carbonate fortified ice-cream had the following over-run of 130%, 139% and 136% respectively.

EXAMPLE 7

CALCIUM FORTIFICATION OF LOW FAT ICE-CREAM

Low fat ice-cream was made using a standard recipe.

Three batches of ice-cream were made :

1. + 0.8% AquaMin
2. + 0.6% Calcium carbonate
3. Control

(Addition of AquaMin provides 100% Calcium fortification in a 200g serving)

Processing conditions were kept constant and it was determined that there were no differences in the over-run between the different batches.

A sensory analysis of the ice-cream was carried out under controlled conditions (report available upon request) during which panellists were asked to assess samples from the three batches ice-cream using the following parameters :

Sample :
Sweetness (1 = not sweet, 5 = extremely sweet)
Creaminess (1 = not creamy, 5 = extremely creamy)
Iciness/Coarseness (1 = very icy, 5 = not icy)
Overall acceptability (1 = worst, 5 = best)

17 panellists took part in this analysis and the results were as follows :

	Sample A +0.8% AquaMin	Sample B +0.6% $CaCO_3$	Sample C Control
Sweetness	3.29	3.12	3.18
Creaminess	4	3.35	3.53
Iciness/Coarseness	4.71	4.24	4.41
Overall Acceptability	3.18	3.29	3.47
Preference	7	3	7

/.....

A statistical Student's t- Test was carried out on the above data and this showed that there was not a significant difference in the results between sweetness and overall acceptability of the product. However differences were evident in the parameters of creaminess and iciness/coarseness. Sample A was significantly creamier and significantly less icy/coarse than Samples B and C.

EXAMPLE 8

CALCIUM FORTIFICATION OF SWEETS

Handmade sweets were made using a traditional recipe of :

Sugar
Water
Cream of Tartar
Flavour
Malic Acid
Food Colours

AquaMin was added to this recipe at a level of 3.5%.

The sugar and water is boiled, allowed to cool, and as it solidifies on a metal bench, the AquaMin, Malic Acid, flavour and dyes are splashed on and folded into the mixture.

It is necessary to add extra Malic Acid (AquaMin: Malic Acid, 3:1) to counteract a bland flavour.

A variety of flavours and colours were used.

Each sweet weighs approximately 3.5g and contains 40 mgs of Calcium.

EXAMPLE 9

COSMETICS

The unique properties of AquaMin make it extremely suitable for a wide range of cosmetic applications, where it can be incorporated into face masks and scrubs and body masks, wraps and scrubs. The high level of naturally occurring trace elements present in AquaMin can regenerate and mineralise the epidermis.

The key properties of AquaMin relevant for cosmetics are :

1. Mineral Content – AquaMin contains a wide range of natural minerals including Calcium, Magnesium, Iodine, Sodium, Boron, Phosphorous, Sulphur, Iron, Sodium, Nickel, Cobalt, Zinc etc. These can revitalise skin to leave as well as playing an important role in our physiology : Calcium strengthens teeth, bones, fingernails and balances the water level of tissue. Magnesium helps combat stress and relaxes muscle contractions. Iodine and Sodium assist in regulating our metabolism. The combination of Calcium, Magnesium and Boron present in AquaMin can alleviate aches and pains in joints when used as a therapeutic seaweed wrap.

2. Particle Size & Structure – AquaMin has an average particle size of 2.5-5 microns, which makes it ideal for cosmetic formulations requiring fine particulate size such as in make-up foundations and sun blocks. Once hydrated, AquaMin's structure collapses to give an extremely smooth texture, close to that of talcum powder.

3. Oil Absorption – AquaMin's high surface area enables it to readily absorb essential oils, up to a level of 40%, thereby cleansing the skin. Similarly, AquaMin can be combined with herbal essences and extracts due to it's absorption property.

Face Masks

A typical formulation is as follows :

AquaMin F	55-60%
Water	40-45%
Essential Oil	3-4 drops (Sandalwood, Teatree etc.)

The above ingredients are mixed to form a paste, which is applied directly to the facial skin and allowed to dry for 5-10 minutes, after which it is washed off with warm water. After removal, the skin is cleansed, smooth and soft to touch, the effects of which can last for several days. /.....

Body Wraps

Typically 250g is required for an average body wrap. In some cases, AquaMin can be combined with other seaweed products such as laminaria and/or fucus.

1. Weight Loss :
The body is wrapped tightly in bandages which have been soaked in an AquaMin paste. These are left in place for 45 minutes and then removed. The effect of the body wrap can reduce 1-2 inches in overall skin measurements and at the same time the skin is very soft.

2. Revitalisation :
The body is covered in an AquaMin paste and then wrapped in plastic and a heated blanket for 40 minutes. Application takes place in a relaxing environment with pleasant music and soft lighting. Afterwards, the paste is then washed off and the skin is left smooth, soft and replenished.

3. Inflammation Therapy :
The AquaMin paste is applied directly to a specific joint which may be swollen, arthritic or bruised. After massaging in lightly, the wrap is left for some time prior to removal. The result is an observed reduction in any swelling and associated aches and pains.

CLAIMS:

1. Use in a solid or semi-solid foodstuff of a material to improve organoleptic and physical properties and calcium content characterised in that the material is a calcareous residue of corallinaceae with a content of heavy metals below the upper limits acceptable for edible products.

2. A use according to claim 1 wherein the product is a foodstuff having an emulsified oil or fat phase into which is incorporated the corallinaceae residue and which has improved organoleptic properties as compared to the same product free of said residue.

3. A use according to claim 1 in which the foodstuff containing fat material in which the corallinaceae residue is distributed generally in the foodstuff.

4. A use according to claim 1 in which the foodstuff is a foodstuff to be consumed in a frozen form.

5. A use according to claim 1 in which the foodstuff is a carbohydrate product.

6. A use according to claim 3 in which the foodstuff is a chocolate product.

7. A use according to claim 5 in which the foodstuff is a farinaceous product.

8. A use according to claim 7 in which the foodstuff is primarily composed of a starch based material.

9. A cosmetic material with a content of a residue of corallinaceae to enhance the properties on skin.

Practitioner's Docket No. _____ *PATENT*

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL, CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type:

(check one applicable item below)

[ ] original.
[ ] design.
[ ] supplemental.

NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.

[x] national stage of PCT.

NOTE: If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P.

NOTE: See 37 C.F.R. § 1.63(d) (continued prosecution application) for use of a prior nonprovisional application declaration in the continuation or divisional application being filed on behalf of the same or fewer of the inventors named in the prior application.

[ ] divisional.
[ ] continuation.

NOTE: Where an application discloses and claims subject matter not disclosed in the prior application, or a continuation or divisional application names an inventor not named in the prior application, a continuation-in-part application must be filed under 37 C.F.R. § 1.53(b) (application filing requirements-nonprovisional application).

[ ] continuation-in-part (C-I-P).

INVENTORSHIP IDENTIFICATION

WARNING: If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor *(if only one name is listed below)* or an original, first and joint inventor *(if plural names are listed below)* of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

FOODSTUFF COMPOSITIONS

SPECIFICATION IDENTIFICATION

The specification of which:

(complete (a), (b), or (c))

(a) [ ] is attached hereto.

NOTE: "The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 C.F.R. § 1.63:

"(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;

"(2) name of inventor(s), and attorney docket number which was on the specification as filed; or

"(3) name of inventor(s), and title which was on the specification as filed."

Notice of July 13, 1995 (1177 O.G. 60).

(b) [ ] was filed on _____, [ ] as Application No. _____
[ ] and was amended on _____ *(if applicable).*

NOTE: Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 C.F.R. § 1.67.

NOTE: "The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 C.F.R. § 1.63:

"(1) name of inventor(s), and application number (consisting of the series code and the serial number; e.g.,08/123,456);

"(2) name of inventor(s), serial number and filing date;

"(3) name of inventor(s) and attorney docket number which was on the specification as filed;

"(4) name of inventor(s), title which was on the specification as filed and filing date;

"(5) name of inventor(s), title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or

"(6) name of inventor(s), title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number; e.g.,08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration."

Notice of July 13, 1995 (1177 O.G. 60), M.P.E.P. § 601(a), 6th ed., rev.3.

(c) [x] was described and claimed in PCT International Application No. PCT/GB99/03580 filed on 29th October, 1999 and as amended under PCT Article 19 on _____ *(if any)*.

SUPPLEMENTAL DECLARATION (37 C.F.R. § 1.67(b))

(complete the following where a supplemental declaration is being submitted)

[ ] I hereby declare that the subject matter of the

[ ] attached amendment
[ ] amendment filed on _____.

was part of my/our invention and was invented before the filing date of the original application, above identified, for such invention.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

[ ] and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and

[ ] in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 C.F.R. § 1.98.

PRIORITY CLAIM (35 U.S.C. § 119(a)-(d))

NOTE: "The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. The claim for priority and the certified copy of the foreign application specified in 35 U.S.C. § 119(b) must be filed in the case of an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, when specifically required by the examiner, and in all other situations, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(i). If the certified copy is not in the English language, a translation need not be filed except in the case of interference; or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate." 37 C.F.R. § 1.55(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

(d) [ ] no such applications have been filed.
(e) [x] such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119(a)-(d)

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING DAY, MONTH, YEAR	PRIORITY CLAIMED UNDER 35 USC 119
G.B.	9823885.0	30th October, 1998	[X]YES [ ]NO
			[ ]YES [ ]NO
			[ ]YES [ ]NO
			[ ]YES [ ]NO
			[ ]YES [ ]NO

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)
(35 U.S.C. § 119(e))

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

PROVISIONAL APPLICATION NUMBER	FILING DATE
_____ / _____	_____
_____ / _____	_____
_____ / _____	_____

CLAIM FOR BENEFIT OF EARLIER U.S./PCT APPLICATION(S) UNDER 35 U.S.C. § 120

[ ] The claim for the benefit of any such applications are set forth in the attached ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART (C-I-P) APPLICATION.

ALL FOREIGN APPLICATION(S), *IF ANY*, FILED MORE THAN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

_____
_____
_____

NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. § 120.

POWER OF ATTORNEY

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(list name and registration number)

JOSEPH H. HANDELMAN, 26179
JOHN RICHARDS, 31053
RICHARD J. STREIT, 25765
PETER D. GALLOWAY, 27885
IAN C. BAILLIE, 24090
THOMAS F. PETERSON, 24790
RICHARD P. BERG, 28145
JULIAN H. COHEN, 20302
WILLIAM R. EVANS, 25858
JANET I. CORD, 33778
CLIFFORD J. MASS, 30086
CYNTHIA R. MILLER, 34678

(Check the following item, if applicable)

[ ] I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

[ ] Attached, as part of this declaration and power of attorney, is the authorization of the above-named practitioner(s) to accept and follow instructions from my representative(s).

SEND CORRESPONDENCE TO

Ladas & Parry
26 West 61st Street
New York, N.Y. 10023

DIRECT TELEPHONE CALLS TO:
(Name and telephone number)

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other document.

NOTE: Each inventor must be identified by full name, including the family name, and at least one given name without abbreviation together with any other given name or initial, and by his/her residence, post office address and country of citizenship. 37 C.F.R. § 1.63(a)(3).

NOTE: Inventors may execute separate declarations/oaths provided each declaration/oath sets forth all the inventors. Section 1.63(a)(3) requires that a declaration/oath, inter alia, identify each inventor and prohibits the execution of separate declarations/oaths which each sets forth only the name of the executing inventor. 62 Fed. Reg. 53,131, 53,142, October 10, 1997.

Full name of sole or first inventor

1-OD

Mohamed (*Given Name*) Bakri (*Middle Initial or Name*) ASSOUMANI (*Family (Or Last Name)*)

Inventor's signature _____

Date March 2 / 2001 **Country of Citizenship** UK.

Residence STRAND FARM

Post Office Address CURRABINNY, CARRIGALINE, Co CORK

IRELAND

Full name of second joint inventor, if any

(*Given Name*) (*Middle Initial or Name*) (*Family (Or Last Name)*)

Inventor's signature _____

Date _____ **Country of Citizenship** _____

Residence _____

Post Office Address _____

Full name of third joint inventor, if any

(*Given Name*) (*Middle Initial or Name*) (*Family (Or Last Name)*)

Inventor's signature _____

Date _____ **Country of Citizenship** _____

Residence _____

Post Office Address _____

(check proper box(es) for any of the following added page(s) that form a part of this declaration)

[ ] **Signature** for fourth and subsequent joint inventors. *Number of pages added* _____

* * *

[ ] **Signature** by administrator(trix), executor(trix) or legal representative for deceased or incapacitated inventor. *Number of pages added* _____

* * *

[ ] **Signature** for inventor who refuses to sign or cannot be reached by person authorized under 37 C.F.R. § 1.47. *Number of pages added* _____

* * *

[ ] Added page for **signature** by one joint inventor on behalf of deceased inventor(s) where legal representative cannot be appointed in time. (37 C.F.R. § 1.47)

* * *

[ ] Added pages to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (C-I-P) application.

[ ] Number of pages added _____

* * *

[ ] Authorization of practitioner(s) to accept and follow instructions from representative.

(If no further pages form a part of this Declaration, then end this Declaration with this page and check the following item)

[ ] This declaration ends with this page.